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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,877	02/22/2002	Sabry Khalfallah	Q68622	7871

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EXAMINER
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BELLO, AGUSTIN

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/079,877

Applicant(s)

KHALFALLAH ET AL.

Examiner

Agustin Bello

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/22/02.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Glance (U.S. Patent No. 5,493,625).

Regarding claim 1, Glance teaches a selective frequency extractor for forwarding one or more selected frequencies of a wavelength division multiplex input signal consisting of N channels to one output port and all other frequencies to another output port, which extractor includes: a demultiplexer (reference numeral 230 in Figure 3) having at least one input port and at least N output ports (e.g.  $N=N-1$  in Glance): for any value of  $i$  from 1 to N, the  $i^{\text{th}}$  output port of said demultiplexer is adapted to receive the corresponding  $i^{\text{th}}$  frequency of said input signal, a multiplexer (reference numeral 231 in Figure 3) having at least  $N+1$  input ports (e.g.  $N+1=N$  in Glance) and at least two output ports (reference numeral 218<sub>1</sub> and 218<sub>2</sub> in Figure 3): for any value of  $i$  from 1 to N (e.g.  $i=3$ ), the  $i^{\text{th}}$  input port of said multiplexer (e.g. the 3<sup>rd</sup> input port of multiplexer 231) is adapted to forward the  $i^{\text{th}}$  frequency of said input signal (e.g. the 3<sup>rd</sup> frequency) to a first output port of said multiplexer (e.g. 218<sub>1</sub>), and for any value of  $i$  from 2 to  $N+1$  (e.g.  $i=3$ ), the  $i^{\text{th}}$  input port of said multiplexer (e.g. the 3<sup>rd</sup> input port of multiplexer 231) is adapted to forward the  $(i-1)^{\text{th}}$  frequency (e.g. the 2<sup>nd</sup> frequency) of said input signal to a second output port of said multiplexer (e.g. 218<sub>2</sub>), and optical switches (reference numeral 221 in Figure

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3) for selectively connecting any  $i^{\text{th}}$  output port of said demultiplexer, for  $i$  from 1 to  $N$ , either to said  $i^{\text{th}}$  input port of said multiplexer or to said  $(i+1)^{\text{th}}$  input port of said multiplexer.

Regarding claim 3, Glance teaches that said demultiplexer and said multiplexer are both of the arrayed waveguide grating type (column 6 lines 23-52).

Regarding claim 4, Glance teaches that said optical switches consist of two interleaved stages of optical switches (e.g.  $221_1$  and  $221_2$  in Figure 3).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glance (U.S. Patent No. 5,566,014) in view of Glance (U.S. Patent No. 5,493,625) and Glance (U.S. Patent No. 5,461,685).

Regarding claim 2, Glance ('014) teaches a reconfigurable frequency add and drop multiplexer, including: a demultiplexer (reference numeral 15 in Figure 2) having at least two input ports (e.g. "INPUT SIGNAL" and "ADDED SIGNAL" in Figure 2) for receiving two wavelength division multiplexes consisting of  $N$  channels, and at least  $N$  output ports: for all values of  $i$  from 1 to  $N$ , the  $i^{\text{th}}$  output port of said demultiplexer is adapted to receive the corresponding  $i^{\text{th}}$  frequency of a first multiplex received at said first input port (e.g. the first frequency is output to port 1 in Figure 2), a multiplexer (reference numeral 17 in Figure 2) having at least  $N$  input ports and at least two output ports: for any value of  $i$  from 1 to  $N$ , the  $i^{\text{th}}$

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input port of said multiplexer is adapted to forward the  $i^{\text{th}}$  frequency to a first output port of said multiplexer (e.g. "OUTPUT SIGNAL" in Figure 2), and optical switches (reference numeral 16 in Figure 2) for selectively connecting any  $i^{\text{th}}$  output port of said demultiplexer, for  $i$  from 3 to  $N$ , to the  $(i-1)^{\text{th}}$  input port of said multiplexer, or to the  $i^{\text{th}}$  input port of said multiplexer (e.g. connecting the  $3^{\text{rd}}$  output port of the demultiplexer to the  $3^{\text{rd}}$  input port of the multiplexer via switch 16c in Figure 2), or to the  $(i-1)^{\text{th}}$  input port of said multiplexer, the first and second output ports of said demultiplexer being each respectively connected to the first and second input ports and to the second and third input ports of said multiplexer (as seen in Figure 2 via switches 16a, 16b, couplers 18a-18N). Glance ('014) differs from the claimed invention in that it fails to specifically teach a demultiplexer with  $N+2$  outputs wherein for any value of  $i$  from 3 to  $N$ , said  $i^{\text{th}}$  output port of said demultiplexer is adapted to receive the  $(i-2)^{\text{th}}$  frequency of the second multiplex received at said second input port. However, such multiplexers are well known in the art. In another Glance Patent ('685), a demultiplexer with  $N+2$  output port is disclosed and is clearly capable of being adapted to allow for any value of  $i$  from 3 to  $N$ , said  $i^{\text{th}}$  output port of said demultiplexer is adapted to receive the  $(i-2)^{\text{th}}$  frequency of the second multiplex received at said second input port. Glance ('014) further differs from the claimed invention in that it fails to specifically teach a multiplexer including at least  $N+1$  input ports. However, a multiplexer of this type is disclosed in Glance ('625) and includes that for any value of  $i$  from 2 to  $N+1$ , an  $i^{\text{th}}$  input port of said multiplexer is adapted to forward the  $(i-1)^{\text{th}}$  frequency to a second output port of said multiplexer. Clearly, the demultiplexers, switches, and multiplexers of Glance could be configured in variety of manners to meet the limitations of the claimed invention, including allowing the  $(N+1)^{\text{th}}$  and  $(N+2)^{\text{th}}$  output ports of said demultiplexer being each connected

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respectively to the Nth input ports and to the (N+1)th input port of said multiplexer.

Furthermore, being that all the disclosures are made by Glance in similar inventions, one skilled in the art would clearly have recognized the interchangeability of the elements in each patent without departing from the spirit or scope of the invention of Glance. As such, it would have been obvious to one skilled in the art at the time the invention was made to combine and configure the disclosures of Glance as claimed, and therefore meet the limitations of the claimed invention.

Regarding claim 5, the combination of Glance teaches that the optical switches consist of three interleaved stages of optical switches (e.g. the first three switches in the system).

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glance (U.S. Patent No. 5,566,014), Glance (U.S. Patent No. 5,493,625), and Glance (U.S. Patent No. 5,461,685) in view of Glance (U.S. Patent No. 5,434,937).

Regarding claim 6, the previous combination of Glance differs from the claimed invention in that Glance fails to specifically teach the optical switches are optical amplifiers. However, Glance in a different patent ('937) discloses such switches (reference numeral 18N in Figure 1). One skilled in the art would have been motivated to include this type of switches in the previous combination of Glance in order to boost the signal power traversing the system. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include the amplifying switches of Glance ('937) in the previous combination of Glance.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB

*A. Bello*  
**AGUSTIN BELLO**  
**PATENT EXAMINER**  
*2/17/05*